

Using Computer Technology to Enhance Diabetic Disease Management in a Large Multi-Specialty Practice

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The desire to improve health outcomes and control health care costs has stimulated great interest in disease management. Disease management focuses on the patient throughout the entire course of disease, measuring desired outcomes related to the patient and each intervention. Traditional health care based on cost component management does little to reduce the long-term costs of chronic illness. Successful disease management requires integrated information systems and the success of these programs is dependent on access to data in all the formats that may represent.

Application of high performance computing in health care has begun to unfold. Computers and related equipment are increasingly being used in data information flow, patient management, program development and maintenance, and more recently in outcomes research.

One of the most common chronic diseases, diabetes is one of the fastest growing health problems in the United States today. 1700 cases are diagnosed every day, and the disease and its complications costs \$92 billion annually.

In our clinic with 200,000 patients, over 9200 patients have been diagnosed with diabetes. They account for 186,000 units of service annually and costs in excess of \$3 million. Clearly, a comprehensive diabetes management program (DMP) is indicated.

We began by identifying diabetics in our population by requesting from our IS department a data download file of all patients and their clinic activity as identified by ICD9 (International Classification of Diseases) codes for diabetes, or diabetes-related complications. We next requested a data file from our contract laboratory of all patients whose laboratory tests for Hemoglobin A1C or Microalbumin were elevated.

Data files were transferred electronically to a PC, merged, and duplicates eliminated. The primary care physicians for these patients were sent letters that described the DMP and were urged to refer their patients to the program. Theoretical compliance to established practice guidelines for diabetes was analyzed. In addition, all patients were sent a packet of information about diabetes; a brochure, the number of a hot line to call for information or assistance, and a comprehensive questionnaire that is electronically scannable.

Questionnaire information includes patient demographics, symptoms, health habits and conditions, diabetes education history, and quality of life as perceived by the patient. This data is merged with the IS and laboratory data files.

One other source of data is a database maintained by the diabetic patient educator on those patients who have been counseled.

All of these data files are continually upgraded and new patients identified and referred. Ongoing analysis of our program data provides information for making any revisions in the process or in the program as needed, thereby ensuring up-to-date patient care.

Our clinic is one of many physician practices owned by a national group. Our DMP has become a model for the other practices to develop similar programs. We are in the process of developing a data repository on the internet at our web site. The other groups will transmit their data to a central database located at this site. As the database will contain data from multiple practices, it will enable us to both contrast and compare data between practices and national diabetes normative data. Analysis will be ongoing, making it possible to make changes to the program as needed in a timely fashion.